

# Case Series: Distal End Radius Giant Cell Tumour Resection And Reconstruction With Autologous Fibula Graft

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## INTRODUCTION:

Giant cell tumour (GCT) is an intermediate, locally aggressive primary bone tumour. It is found in about 20% among benign bone tumours. It is typically presented as solitary lesion in meta-epiphyseal region of long bones (85%), axial skeleton (10%) and small bones of hands and feet (5%)<sup>1</sup>.

The challenge in managing distal radius GCT is the sacrifice of the articular surface for complete excision to prevent recurrence and also the complex reconstructions. We would like to report our experience in this series of four patients with distal end radius GCT treated with resection and reconstruction with autologous non-vascularized fibula graft from January 2015 until July 2016.

## MATERIALS & METHODS:

There were total four patients with distal end radius GCT treated at our institution between January 2015 and July 2016. They were 3 female and 1 male patients, aged between 20 to 51 years at presentation. Detailed history was taken from patients, while demographic data and imaging were obtained from record office. We have assessed the radiological and functional outcome during follow up. All patients in our series were presented with progressively enlarged painful swelling of wrist. One patient had pathological fracture. Radiological evaluations were done and followed by incisional biopsy. Surgeries were done after histopathological examination results obtained. We performed the surgeries via volar approach with wide resection from safety margin as determined by MRI. Subsequently, non-vascularised proximal fibula autografts were harvested via direct lateral approach. Parts of the lateral ligaments attached to proximal fibula are retained. It was then fixed to the remaining radius using narrow locking plate. Tumour bed was irrigated with 70% alcohol and sterile water. Wrist ligaments reconstruction done via repair of the remnants of the radio-carpal ligaments to the graft. The construct were further stabilized with k-wires and immobilized with a backslab post-operatively.

## RESULTS (Table 1)

During follow up, the combined range of motion (supination, pronation, dorsiflexion, palmar flexion, ulnar deviation and radial deviation) and complications were evaluated. The average combined ROM was 98.75°, average revised MSTS (Musculoskeletal Tumour Society Score) is 24 from total of 30marks (80%). One patient had surgical site infection at wrist but resolved. Another patient had foot drop which has not recovered, the same patient also had subluxation of wrist post surgery 5 months, in which reinsertion of k-wire done. The last patient has stiffness of all small joints of fingers and undergoing physiotherapy. None of our patients developed local recurrence or metastasis.

No	Age	Sex	Campanacci's Grade	Graft union	Combined ROM	Revised MSTS
1	20	F	II	✓	110°	25/30 (83.3%)
2	45	F	II	✓	115°	26/30 (86.7%)
3	45	M	III	✓	90°	23/30 (76.7%)
4	51	F	II	✓	80°	22/30 (73.3%)

Table 1



Figure 1A – Plain radiograph of pre-operative right wrist GCT  
Figure 1B & 1C – AP and lateral view for same patient post wide resection of distal radius GCT and proximal fibula autograft

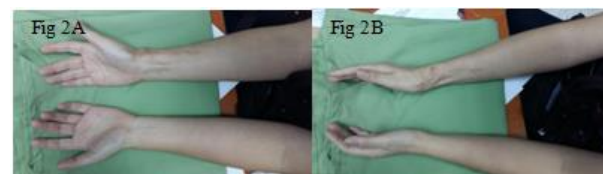


Figure 2A & 2B – Appearance of wrist of a patient at 1 year follow up.

## DISCUSSIONS:

Options of treatment of distal radius GCT, include curettage followed by bone graft or cementing. However curettage is often associated with higher rate of recurrence<sup>2,3</sup>. Others were en bloc excision and reconstruction with non vascularised or vascularised fibular autograft, osteoarticular allograft, ulnar centralisation, or endoprosthesis<sup>3</sup>. The use of non-vascularised fibular graft for reconstruction is technically less demanding, shorter operative time and expenses compared to vascularised fibular graft.

## CONCLUSION:

The use of non-vascularised autologous proximal fibula graft for reconstruction after wide resection distal radius